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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/073,695	02/11/2002	Uttam Shyamalindu Ghoshal	AUS920000414US2	8989

7590 06/24/2003

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EXAMINER

KIELIN, ERIK J

ART UNIT

PAPER NUMBER

2813

DATE MAILED: 06/24/2003

8

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/073,695

Applicant(s)

GHOSHAL ET AL.

Examiner

Erik Kielin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 12-27 is/are pending in the application.
- 4a) Of the above claim(s) none is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1, 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Election/Restrictions*

1. Cancellation of claims 9-11, drawn to the species of Group I is acknowledged.

Applicant's election with traverse of the species of Group II, claims 12-19 in Paper No. 7 is acknowledged. The traversal is on the ground(s) that undue burden would not be imposed on Examiner by searching the different species of Groups II and III. In support Applicant quotes MPEP § 808.02 as indicating that Examiner must provide evidence of serious burden. However, it is noted that this section is not directed to inventions related as species. MPEP 808.02 states in pertinent part,

“Where the related inventions as claimed are shown to be distinct under the criteria of MPEP § 806.05(c) - § 806.05(i), the examiner, in order to establish reasons for insisting upon restriction, must show by appropriate explanation one of the following: ...” (Emphasis added.)

MPEP § 806.05(c) - § 806.05(i), are *not* drawn to inventions related as species. There is no requirement to indicate different classifications for different species. Rather MPEP § 806.04(a) to § 806.04(i) treats patentably distinct species. MPEP § 806.04(e) states,

“Claims are definitions of inventions. *Claims are never species.* **Claims may be restricted to a single disclosed embodiment (i.e., a single species,** and thus be designated a *specific species claim*), or a claim may include two or more of the disclosed embodiments within the breadth and scope of definition (and thus be designated a *generic or genus claim*).

*Species are always the specifically different embodiments.”*  
(Italicized emphasis in original; bold emphasis added.)

While Examiner believes the restriction to be proper, in the interest of customer service, **the restriction requirement will be withdrawn presently**, so long as Groups II and III remain

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co-extensive in scope. Examiner reserves the right to restrict the Groups should the claims be amended divergently.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 12-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Line 5 of each of claims 12 and 20 recites the limitation, "pointed tipped structures of metal." It is unclear whether this metal is the same metal as the "metal layer" or if it is a different metal.

The remaining claims are rejected for depending from the above rejected claims.

For the purposes of patentability, the claims will be interpreted as best understood.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 12, 13, 18 and 20, 21, 26 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 55-119176 (Hashimoto).

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Regarding claims 12 and 20, **Hashimoto** discloses a method of and system for forming pointed metal tips comprising,

forming a mask of patterned photoresist 4 onto a layer of metal 1 wherein the photoresist forms an array of photoresist areas that correspond to areas for which tips of the substantially pointed tip structure of the metal are desired --as further limited by instant claims 13 and 21;

etching the layer of metal 1 in the presence of the photoresist mask 4 to produce substantially pointed tipped metal structures of metal 6 wherein the structures are "needle-like" and therefore conical-shaped --as further limited by instant claims 18 and 26; and

removing the photoresist. (See Abstract and Figs. 1-6.)

The limitation "for use in a thermoelectric device" does not have patentable weight in the claim as presently written because it is in the preamble and only indicates the intended use of the metal tips.

The MPEP 2111.02 states,

**PREAMBLE STATEMENTS RECITING PURPOSE OR INTENDED USE**

The claim preamble must be read in the context of the entire claim. The determination of whether preamble recitations are structural limitations or mere statements of purpose or use "can be resolved only on review of the entirety of the [record] to gain an understanding of what the inventors actually invented and intended to encompass by the claim." Corning Glass Works, 868 F.2d at 1257, 9 USPQ2d at 1966. If the body of a claim fully and intrinsically sets forth all of the limitations of the claimed invention, and **the preamble merely states**, for example, the purpose or **intended use of the invention, rather than any distinct definition of any of the claimed invention's limitations, then the preamble is not considered a limitation and is of no significance to claim construction.** Pitney Bowes, Inc. v. Hewlett-Packard Co., 182 F.3d 1298, 1305, 51 USPQ2d 1161, 1165 (Fed. Cir. 1999). See also Rowe v. Dror, 112 F.3d 473, 478, 42 USPQ2d 1550, 1553 (Fed. Cir. 1997) ("where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention, the preamble is not a claim limitation")" (Emphasis added.)

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The following case law also supports this position.

“A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See In re Hirao, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and Kropa v. Robie, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).”

6. Claims 12, 13 and 20, 21 are rejected under 35 U.S.C. 102(b) as being anticipated by **JP 10-146799**.

Regarding claims 12 and 20, **JP 10-146799** discloses a method of and system for forming pointed metal tips comprising,

forming a mask of patterned photoresist **3, 5** onto a layer of metal **1**, wherein the photoresist forms an array of photoresist areas that correspond to areas for which tips of the substantially pointed tip structure of the metal are desired --as further limited by instant claims 13 and 21;

etching the layer of metal **1** in the presence of the photoresist mask **3, 5** to produce substantially pointed tipped metal structures of metal **2, 4**; and  
removing the photoresist. (See Abstract and Figs. 1-4.)

The limitation “for use in a thermoelectric device” does not have patentable weight in the claim as presently written because it is in the preamble and only indicates the intended use of the metal tips.

7. Claims 12-15, 18 and 20-23, 26 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 57-207362 (**Shibata** et al.).

Regarding claims 12 and 20, **Shibata** discloses a method of and system for forming pointed metal tips comprising,

forming a mask of patterned photoresist **7, 9** onto a layer of metal **8** --which may be copper --as further limited by instant claims 14 and 22-- wherein the photoresist forms an array of photoresist areas that correspond to areas for which tips of the substantially pointed tip structure of the metal are desired --as further limited by instant claims 13 and 22-- because plural elements are formed (section entitled, "Purpose");

etching the layer of metal **8** in the presence of the photoresist mask **3, 5** to produce substantially pointed tipped metal structures of metal **8** which are conically shaped --as further limited by instant claims 18 and 26;

removing the photoresist; and

coating the pointed tipped metal structures **8** with a second metal **18** --as further limited by instant claims 15 and 23.

(See Abstract and Figs. 3, 4, and 8(a).)

The limitation "for use in a thermoelectric device" does not have patentable weight in the claim as presently written because it is in the preamble and only indicates the intended use of the metal tips.

### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 12-19, and 20-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 5-226704 (**Nishikawa** et al.) in view of **Hashimoto**.

**Nishikawa** discloses a method of and system for forming a thermoelectric device comprising,

providing pointed metal tips 9 which are pyramid-shaped (Figs. 2, 4) or conical-shaped (paragraph [0053], "called tapering columnar structure" in the machine language translation) --as further limited by instant claims 19, 20, 21, and 27;

coating the metal tips 9 with a second metal layer 12 (called the "electrode layer") --as further limited by instant claims 15 and 23;

coating the substantially pointed tipped structures with a layer of thermoelectric material 13, 14 --as further limited by instant claims 16 and 24;

coating the second metal layer 12 with a layer of thermoelectric material 13, 14 --as further limited by instant claims 17 and 25.

Regarding claims 14 and 22, the metal projections may also be copper (paragraphs [0030]-[0036]; Figs. 7-9).

**Nishikawa** does not teach how the pointed tipped metal structures 9 are fabricated.

**Hashimoto** teaches a method of forming pointed tipped metal structures on the surface of a metal substrate using the method steps and system of claims 1 and 20, respectively, as noted above in the rejection of the claims over **Hashimoto**.

It would have been obvious for one of ordinary skill in the art, at the time of the invention to use the method of **Hashimoto** to form the pointed tipped metal structures of **Nishikawa**,



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because **Nishikawa** is silent to the method by which the tips are formed such that one of ordinary skill would be motivated to use known methods, such as that taught in **Hashimoto**.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erik Kielin whose telephone number is 703-306-5980. The examiner can normally be reached on 9:00 - 19:30 on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr., can be reached at 703-308-4940. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

  
Erik Kielin  
June 20, 2003